

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-12. (Canceled).

13. (Currently Amended) Apparatus to be worn on the body for the production and detection of fluorescence at or below a skin surface, said apparatus comprising:

a light source for directing fluorescence excitation light along a light path extending over ~~{{a}}~~said skin surface;

a reflector having a three dimensionally curved, shell-like light reflecting interface positioned to receive light from the light source passing over said skin surface along a portion of said light path and to reflect said light transversely with respect to said portion of the light path so as to focus said light on an illumination zone at or below said skin surface for stimulation of fluorescence at said zone, and to collect fluorescence light emitted at said zone and to reflect and at least partially collimate said light to pass back along said portion of the light path; ~~{{and}}~~

a detector for receiving said light emitted as fluorescence after reflection at said interface, and a housing containing the light source, detector and reflector, which housing is configured to be worn on the body, wherein said reflector interface substantially has the form of a partial paraboloid, aspheric, toroidal, or biconic surface, and wherein said reflector interface is defined by an equation

$$Z = \frac{cr^2}{1 + \sqrt{1 - (1+k)c^2r^2}}$$

wherein:

c is from 0.07 to 0.5 and k is from -1.5 to -0.7, where z is the "sag" of z-coordinate along the rotational axis, c is the curvature (the reciprocal of the radius R), k is the conical constant and r is the radial coordinate.

14. (Previously Presented) Apparatus as claimed in Claim 13, further comprising a beam splitter reflecting light emitted by said light source to pass to said reflector and receiving fluorescence light from said reflector and passing said fluorescence light to said detector.

15. (Previously Presented) Apparatus as claimed in Claim 14, wherein said reflector, light source and detector are arranged in a generally coplanar manner and said beam splitter has a planar reflective interface that lies in a plane orthogonal to the co-planarity of the reflector, light source and detector.

16. (Previously Presented) Apparatus as claimed in claim 13, further comprising an excitation filter selecting an excitation wavelength from the light emitted by the light source to pass to said reflector.

17. (Previously Presented) Apparatus as claimed in claim 13, further comprising an emission filter selecting an emitted fluorescence wavelength to pass to said detector.

18. (Currently Amended) Apparatus as claimed in claim 13, comprising a lens or a second reflector ~~focussing~~ focusing fluorescence light on said detector.

Claims 19-22. (Canceled).

23. (Currently Amended) Apparatus as claimed in ~~Claim 19~~ claim 13, wherein said reflector interface includes that part of a paraboloid, aspheric, toroidal, or biconic surface that is generated by the cutting of a paraboloid, aspheric, toroidal, or biconic surface by a right circular cylinder erected centred on the illumination zone.

Claims 24-25. (Canceled).

26. (Currently Amended) Apparatus as claimed in ~~Claim 19~~ claim 13, wherein said reflector interface substantially has the form of a part of a half paraboloid.

Claims 27-28. (Canceled).

29. (Currently Amended) Apparatus as claimed in claim 13, ~~further including a~~ wherein the housing containing the light source, reflector and detector ~~and having~~ has a base surface containing a window for passing excitation light out of the housing and receiving fluorescence light into the housing and being for engagement in use against the said skin surface at or below which said fluorescence occurs.

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30. (Currently Amended) Apparatus as claimed in claim ~~13~~ 29, wherein said light path makes an angle of no more than 10 degrees with a plane defined by said base surface.